Title (en)

Method for particulate-matter measuring of exhaust gas and an apparatus therefor

Title (de)

Verfahren zur Messung des Feststoffanteils von Auspuffgasen und Vorrichtung dafür

Title (fr)

Méthode et dispositif pour la mesure de la matière contenue sous la forme de particules dans les gaz d'échappement.

Publication

EP 1063516 A2 20001227 (EN)

Application

EP 00108778 A 20000425

Priority

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Abstract (en)

This invention provides a method for detecting soot signal in the PM measurement in exhaust gas being capable of extracting in good efficiency even a small pulse signal buried in noise, an apparatus for measuring PM contained in exhaust gases being capable of detecting the soot signal in good precision even in case of fluctuation of the base, and a method for detecting the soot signal in the PM measurement in exhaust gas. <??>This invention comprises sampling the gas G exhausted from the internal combustion engine 1 as a sample gas S, introducing it in a frame ionization detector 5, taking the original signal a outputted from the frame ionization detector 5 through the preamplifier 7 into a signal processing apparatus 8 using a computer, and providing the signal a taken in with a threshold value with a threshold value to extract the pulse-shaped soot signal 13,14, taking said original signal a into a low-pass filter having frequency characteristics which are approximately equal to the frequency characteristics of said preamplifier, and providing the signal 10 filtered through the low-pass filter with a threshold value T to extract said soot signal 13,14. <??>This invention comprises sampling the gas G exhausted from the internal combustion engine 1 as a sample gas S, introducing it in a frame ionization detector 5, providing the original signal a outputted from the frame ionization detector 5 at that time with a threshold value to extract the pulse-shaped soot signal, which includes: (1) a first step of preparing an original shift signal Äf(t-t0)Ü with retardation by a fixed time (t0) from the original signal Äf(t)Ü, (2) a second step of deducting the original shift signal Äf(t - t0)Ü from said original signal Äf(t)Ü to prepare a subtraction pulse signal ÄF(t) = f(t) - f(t - t0)Ü comprising a positive and negative pulse component, (3) a third step of preparing a positive pulse signal F+ (t) by extracting only the positive component out of the positive and negative pulse components, (4) a fourth step of preparing a positive shift signal ÄF + (t - t0)Ü which is made by delaying the positive pulse signal F+ (t) by a fixed time (t0), (5) a fifth step of preparing a positive and negative addition pulse signals ÄG(t) = F(t) + F+ (t - t0)Ü by adding the positive shift signal ÄF +(t - t0)Ü prepared in the fourth step to the subtraction pulse signal ÄF(t)Ü prepared in the second step, (6) a sixth step of preparing the positive addition signal G + (t) by extracting only the positive component out of the pulse components constituting the positive and negative addition pulse signals G(t) to reproduce the pulse component of the original signal with the positive component, and (7) a seventh step of detecting a soot signal by providing the positive addition signal G+ (t) with a threshold value.

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